

Section 954
OPEN GRADED SURFACE COURSE

954.01 Scope

Provides guidelines to determine an Open Graded Surface Coarse (OGSC) Mix Design for Department projects. The Contractor will determine the aggregate gradation and submit the materials to the department to determine binder content. The department approves aggregate gradation according to specification and supplies the mix design.

REFERENCES:

UDOT MANUAL OF INSTRUCTION PART 8

UDOT STANDARD SPECIFICATIONS

UDOT PROJECT SPECIAL PROVISIONS

954.02 Contractor Submittals To the Region Materials Laboratory

A minimum of 10 working days before paving, Contractor submits job mix gradation, aggregate quality test results, hydrated lime and pre-blended samples. Aggregate quality tests, asphalt binder, lime and job mix gradation must meet specification requirements. Pre-blended samples are submitted as below:

Pre-Blended Samples: A pre-blended sample is a blend of the final aggregate structure, without lime and asphalt binder. The hydrated lime is submitted separately. The aggregate shall be batched such that it will meet the target gradation after lime induction. If the gradation with the lime does not meet the target values within $\pm 1\%$ for the #200 sieve and $\pm 2\%$ for all other sieves, the submitted samples may be determined to be unacceptable by the Region Materials Engineer.

Samples for Bonding and Drainage Test

- 5 - 5300 g samples to be tested according to Appendix A of this section. (In the case of lightweight aggregate sample size may vary according to the volume of the aggregate)
- Butter Batch

Samples to be submitted after the mix design is complete:**4 Asphalt Binder Correction Samples per ignition oven – AASHTO T 308**

Samples are submitted at mix design asphalt binder content and gradation: blend the final aggregate structure with hydrated lime, RAP, and asphalt binder according to MOI 8-988 prior to submitting.

954.03 Determining Design Asphalt Binder Content

The Region Materials Engineer (RME) determines Design Asphalt Binder Content. The Region materials laboratory will obtain appropriate asphalt binder from the Central Materials Laboratory. The RME may require the Bonding and Drainage test be performed, Appendix A.

954.04 Changes in Job Mix Gradation

Contractor submits a written request for a change in job-mix gradation. The RME has five

working days to review changes and determine adjustment to binder content if necessary.

Appendix A – Bonding and Drainage of OGSC

A.01 Scope

This method of test covers UDOT's design procedure for the "determination of bonding" of Open Graded Seal Coats through the analysis of asphalt cement "drainage."

A.02 Apparatus

- **Bonding Form** – 12 x 12 in. metal frame, 1 in. deep
- **Double ply cardboard** or equivalent - larger than the 12 x 12 in. bonding frame
- **Steel Pin Roller** - 4 in. diameter, 14 in wide, 30 lb
- **Balance or Scale** – sufficient capacity and readable to 0.1 g.
- **Miscellaneous** – Metal pans, metal spatulas or spoons, timer and gloves, etc.

A.03 Procedure

Prepare and mix samples according to 8-988, Guidelines for Laboratory Mixing with the following modification(s):

- Do not age mix according to AASHTO R 30.
- Proceed with the Bonding and Drainage procedure as listed below.

A.04 Bonding and Drainage Procedure

- Prepare four samples in 0.5% asphalt binder increments such that they meet the following:
 - Two samples less than final selected asphalt binder content
 - One sample approximately equal to final selected asphalt binder content
 - One sample higher than final selected asphalt binder content

(It is necessary to establish a minimum of two points below and one above to verify that no inconsistencies exist in the selection process of the optimum binder design content.)

- Center Bonding Form over cardboard
- Place mix in Bonding Form, spread to level
- Compact mix – 10 passes (a pass is once in each direction)

- Cool for 10 ±2 minutes
- Remove bonding form and mix
- Visually examine cardboard
- Verify sequentially larger amounts of drainage occur as the asphalt binder content is increased

A.05 Selecting Asphalt Binder Content

The asphalt binder content that provides 70-90 percent coverage of the cardboard surface is determined by visual examination. If desired an additional sample may be batched and the 70-90 percent coverage verified.